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# Class mobility across three generations in the U.S. and Germany

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Abstract:
Based on data from the Panel Study of Income Dynamics and the Socio-economic Panel, we study the class mobility of three concurrent generations in the U.S. and Germany. We find that, in both countries, the grandfathers' class is directly associated with their grandchildren's social position. We propose three possible mechanisms which could explain the observed multigenerational mobility patterns. First, we consider the role of class-specific resources for mobility strategies. Second, we suggest a more general explanation by integrating grandparents' class into the reference frame for mobility decisions. Third, we argue that multigenerational class associations could be the result of categorical inequality based on race or ethnicity. We find that outflow mobility rates differ across grandfathers' class positions. Three-generational immobility is most frequent in lower and higher class positions. Log-linear analyses show that, in both countries, significant grandfather effects foster immobility within most classes and limit mobility between the working and service classes in Germany specifically. These effects partially lose significance if we only study white Americans and native Germans. Combining the two national mobility tables, we find that the pattern of three-generational mobility is similar in both countries.

Keywords: social mobility, multigenerational, Germany, U.S., EGP, log-linear analysis

Highlights

- We argue that children's class destinations are affected by their grandparents' class
- We use log-linear models to analyze three-generational mobility tables
- Class associations exist across three generations in Germany and the U.S.
- Three-generational effects are similar in Germany and the U.S.
- Immobility and mobility barriers exist, especially between the highest- and lowest-class positions

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## 1. Introduction

Contemporary research into social mobility is typically restricted to the study of class mobility between parents and their offspring. Recently, Robert Mare has questioned this approach and argued in favor of a multigenerational perspective on the transmission of inequality (Mare, 2011, p. 9f.). Building on Mare's argument, we add three-generational mobility analyses for Germany and the U.S. to recent contributions for Britain and Finland (Chan & Boliver, 2013a, 2013b; Erola & Moisio, 2007). In this paper, we focus on whether sons' relative mobility chances are related to grandfathers' class positions over and above sons' dependency on their father's class position. We develop a theoretical argument in order to incorporate three-generational mobility effects into the framework of two-generational social mobility research. Moreover, we analyze and compare the patterns of three-generational mobility within as well as between countries. Germany and the U.S. are two countries which differ strongly in the institutional and cultural foundations of their respective class structures. The comparison between these two countries serves as a test for the hypothesis that three-generational relative mobility differs between countries with distinct stratification systems against the alternative hypothesis that they are similar despite significant cultural differences.

Section 2 is dedicated to theoretical considerations of multigenerational mobility. We begin with a review of the literature on the existence and patterns of three-generational class mobility (2.1). In the following section, we develop theoretical explanations for understanding three-generational mobility (2.2). By contrasting the U.S. and German political economies, we derive expectations about cross-country differences with regard to multigenerational mobility patterns (2.3). Section 3 briefly explains the utilized data and concepts. The empirical results are presented in section 4. We start with a description of each generation's class distribution within our samples (4.1) and continue with an analysis of absolute mobility patterns (4.2). The remainder of the section is dedicated to an analysis of relative mobility patterns in both countries by means of log-linear models (4.3). First, we test whether significant three-generational effects exist. Second, we study the pattern of three-generational effects and, third, relate them to our explanatory framework. Fourth, we analyze both countries together and test whether national differences prevail over commonalities. In section 5, we conclude with a short summary of our findings and some thoughts on how to proceed further.

## 2. Do grandparents matter? Theoretical framework and literature review

Research on three-generational mobility patterns examines whether and to what extent grandparents' class might impact the class attainment of children over and above intergenerational transmissions from grandparents to parents and from parents to children. Mobility patterns refer to sets of relative mobility chances (i.e., the chances that an individual originating from a given class enters a certain class destination rather than another relative to respective chances of individuals from other class origins). Thus, the core question to answer is whether multigenerational social mobility is to be understood as a first-order Markov chain or whether there is a direct effect from more distant kin (a second- or even higher-order Markov chain). If social mobility resembles a first-order Markov chain, the grandparent's class does not influence the class position of children net of the indirect effect mediated by the parent's class (Hodge, 1966, p. 20). Relative social mobility is often taken as an indication of the degree of openness of a societies' class structure. The analysis of three-generational social mobility, therefore, is concerned with the persistence or inertia of inequalities across multiple generations. If social mobility research were to establish a regular effect of grandparents on children over and above the two-generational mobility chain but in the same direction towards sustained social barriers and self-reproduction, the liberal idea of "open societies" would be even further contradicted by empirical evidence.

It should be noted that we focus on relative social mobility or "fluidity" from the perspective of the child's generation. When talking about social mobility or fluidity from grandparents to parents, we refer to the associations between the grandparents and parents of the given child's generation, thus examining the issue retrospectively. This is important, as we ignore many interesting features of multigenerational social mobility, which, as highlighted by Mare (2011), refer to the relationship of (absolute) social mobility, marriage, and fertility in the process of social reproduction across cohorts and generations (hence, from a prospective perspective). By restricting our sample for empirical analysis to the male lineage only, we ensure that the relations between father's and grandfather's classes can be interpreted as processes of social class that took place in the antecedent generations of our sampled sons. Finally, it is important to note that we discard potential and more complex interactions between the three generations and assume that the effect of the grandparent's class is constant across fathers' class locations.

In the following, we will first review the previous empirical evidence for and against the existence of class associations across three generations (2.1). We will then develop theoretical evidence for why a grandparental effect on children should be expected and what the

underlying mechanism could be (2.2). Finally, we will generate hypotheses on the potential differences of grandparental effects between Germany and the U.S.A. specifically (2.3).

## 2.1 Evidence for and pattern of three-generational class associations: Literature review

Findings from three-generational mobility research so far can be summarized as follows. Most studies find a statistically significant, albeit small, direct impact from grandparent's class position on the class attainment of children. Researchers have found evidence in favor of a net association across three generations in Britain (Chan & Boliver, 2013a), Canada (Goyder & Curtis, 1977), and the U.S. (Beck, 1983). Further evidence in favor of direct three-generational correlations based on analyses of absolute mobility rates have been presented for Australia, Britain, Denmark (Allingham, 1967), and France (Gollac & Laulhé, 1987; Pohl & Soleilhavoup, 1982). Only the results for Finland and the U.S. seem to indicate that there are no significant grandparental effects (Erola & Moisio, 2007; Hodge, 1966; Warren & Hauser, 1997). However, Chan and Boliver reexamine the Finnish results and conclude that the association between grandparent's and children's class is indeed significant in the understanding of the three-generational mobility table (Chan & Boliver, 2013b). Likewise, Warren and Hauser's results have been challenged on methodological grounds (Mare, 2011, pp. 3,16). Hodge also found a statistically significant interrelation of grandfathers' and sons' occupational positions, but, like Erola and Moisio, deemed it too small to matter substantially (Hodge, 1966, p. 25). Based on these previous studies, it seems appropriate to conclude that evidence for a net grandparent impact on children's relative mobility chances can be found in all countries analyzed so far. That said, the direct impact of grandparents' class position is often small compared to the intergenerational associations between grandparents and parents as well as parents and children.

The follow-up question then is whether the associations between grandparents' and children's class positions are similar or different across countries and whether potential differences follow the same pattern as cross-country differences of intergenerational mobility patterns. This question has not been addressed systematically in the studies so far. In the following, we extract three main findings from previous studies: Grandparents' class (a) seems to motivate counter-mobility in the case of mobile parents, (b) fosters immobility in high and/or low social positions across countries, and (c) restricts mobility into these positions for lineages originating in manual classes in at least some countries. Three-generational mobility may therefore resemble the degree of class inheritance within high service classes and the relationship between high service and manual working classes, which is to be found in two-generational mobility studies (Breen, 2004a; Erikson & Goldthorpe, 1992; Hout, 1988).

An often-found pattern refers to "counter-mobility." Some studies found that – from the perspective of absolute social mobility – children are likely to attain similar classes to their grandparents even if their parents were mobile. This three-generational association is particularly strong for both the highest and the lowest class positions. Allingham (1967) compared fathers' and sons' mobility tables based on Australian, Danish, and British data. He found evidence for a three-generational class regression, i.e. "downwardly-mobile fathers have the highest proportion of upwardly-mobile sons, upwardly-mobile fathers have the highest proportion of downwardly-mobile sons, and immobile fathers have the highest proportion of immobile sons" (Allingham, 1967, p. 448). Similar findings related to class reproduction across multiple generations, particularly in the highest and lowest classes, were reported for France by Pohl and Soleilhavoup (1982). Their analyses of absolute mobility rates suggests that immobility over three generations is especially high at the top and the bottom of the French class structure (Pohl & Soleilhavoup, 1982, p. 39f.). These findings have also been supported for different countries by means of log-linear models. Chan and Boliver, reporting on Britain, note that immobility between grandparents and parents fosters the class immobility of children, while, in the case of mobile parents, children are more likely to reenter the class of their grandparents (Chan & Boliver, 2013a, p. 16). Similar grandparent effects have been found in Finland. Erola and Moisio's statistically significant "lagged" effects – Models VII and VIII – suggest such a reading (Erola & Moisio, 2007, p. 177). Their best-fitting model (VIII, at least according to the BIC criterion) incorporates associations accounting for immobility in, and barriers to, the service classes across all parental classes. The grandparent effect seems to foster in-family class reproduction in Finland as well, especially in the upper classes, and marked boundaries between manual and high service classes. For the U.S., Beck also found that grandfathers' class positions significantly impacted the likelihood of children entering similar class positions, independent of the father's occupation (Beck, 1983, p. 278ff.). Similar findings for the highest non-manual classes are presented by Goyder and Curtis (1977) for Canada.

### 2.2 Grandparents' class positions and intergenerational social mobility

Given that there is a direct effect of grandparents' social class on children's social class, how can it be explained and conceptualized? The conceptualization of three-generational social mobility as a Markov chain provides a point of departure for the justification of an additional grandparental effect. Thinking of multigenerational social mobility in terms of a Markov chain does not rule out the notion that grandparents may have an impact on children's mobility process. The patterns of social fluidity in a two-generational perspective might very

well already capture some regular patterns of support that children originating from a particular social class receive from their grandparents. From this perspective, the father's social class serves as a proxy for grandparental influence. However, there are good reasons to assume that the amount and relevance of the grandparental influence on children's status attainment varies according to the variation of the grandparent's social class. Furthermore, there are good reasons to assume that the pattern of the grandparental effect on the child's generation follows similar patterns to those of the two two-generational mobility sub-tables.[1] In other words, we hypothesize that the grandparental effect in the three-generational mobility table follows a logic of "cumulative (dis-)advantages" (DiPrete & Eirich, 2006). This cumulative logic should operate as the inertia of social class reproduction across multiple generations: i.e., children should be more likely to end up in the same social class as their parents if the parents themselves originate from that class. It should also work off the diagonal, with the relative chances of children to obtain a higher social position than their parents being higher than on average if the grandparents already possessed a higher social class position and vice versa. This includes counter-mobility.

Along these same lines, mechanisms underlying a potential grandparental effect should be the same as the mechanisms at work in two-generational social mobility. We propose three different mechanisms to explain multigenerational social mobility. First, grandparents' resources may directly affect the mobility chances of children. Second, grandparents' class position can be understood as an important constituent of the reference frame that guides mobility decisions. Third, "durable social inequalities" (Tilly, 1998) with respect to categorical cleavages may exert a persistent structural effect on the mobility chances of (dis-)advantaged groups even across multiple generations.

The first argument for a direct three-generational mobility effect refers to resources that might be transferred directly from grandparents to children. This will, however, only result in an independent effect of grandparents on children if there is systematic variation in the distribution of grandparental resources across parents, which is likely for parents originating from different grandparental classes. Mare (2011) highlights the importance of unequal access to resources for multigenerational mobility. Children provided with grandparental resources may succeed even if their parents lack the appropriate means in the competition for rare positions, e.g., through investment in private education or the foundation of a business.

1 These hypotheses about grandparental effects are of course conditional on the (by now empirically well established) assumption of "constant social fluidity." Any disruption of the relative mobility chances between cohorts will make it very difficult to derive meaningful hypotheses about the patterns of the grandparental effect. However, from all what we know about (men's) social fluidity, we do not expect much change across cohorts in Germany and the U.S. (Beller, 2009; Breen & Luijkx, 2004; Erikson & Goldthorpe, 1992).

Hence, grandparents' economic, social, and cultural resources may affect their grandchildren's educational and class attainment independent of parental mediation. The probability of direct inheritance of capital across three generations is dependent on the capital's durability as well as the geographic vicinity of grandparents and children. Economic capital – such as valuable goods, productive means, stocks, or other forms of wealth – can be directly inherited (e.g., in form of a dynasty trust) across several generations. Grandparents' cultural capital may impact grandchildren's cognitive capacities, knowledge, and skills. This inherited cultural capital may consequently affect children's interests and abilities with regard to future education, academic performance, or working decisions (Bertaux & Delcroix, 2000; Bourdieu, 1984). However, the resource-based argument explains multigenerational transmission of advantages for rather small, albeit significant, social groups who already possess large amounts of economic, cultural, or social capital in the grandparental generation (e.g., the very wealthy, Ivy League dynasties, or multigenerational households). Nevertheless, we expect grandparental resources to favor three-generational class reproduction and – in the case of mobile parents – counter-mobility towards grandparental origins, in particular for children originating from higher social classes.

A second mechanism that we propose refers to the mobility decisions of children and the idea that parental social class serves as a reference frame for these decisions. Following this explanation, we suggest a general but indirect mechanism fostering multigenerational class inheritance. Within the rational action paradigm often applied to educational and social mobility decisions, relative two-generational mobility patterns result from the class-specific expected utility and success probabilities for various decision alternatives as well as the unequal costs involved (Breen & Goldthorpe, 1997; Erikson & Goldthorpe, 1992; Goldthorpe, 2007). From this perspective, parental class position is commonly assumed to be the reference point for children's educational and occupational decisions. From a multigenerational perspective, however, both the parent's reference frame and the children's "sense of belonging" may be affected by grandparents' class position or by parental class trajectories (Bourdieu, 1984, p. 77). The suggested mechanism suits the empirical findings of counter-mobility and class regression well. Such mobility patterns unravel as a "back to the roots" scenario if seen from a three-generational perspective (Chan & Boliver, 2013a). Parents that were downwardly mobile, or simply failed to ascend, might push their children to do better or even act on behalf of themselves, i.e., still remain with their social origin as the reference frame for the mobility decisions of their children (see, for example, the qualitative work by Bertaux and associates on multigenerational mobility (Bertaux, 1995; Bertaux & Bertaux-

Wiame, 1996; Bertaux & Delcroix, 2000). On the other hand, parents who experienced upward mobility may still have a sense of belonging to their lower class origins. It is likely that they do not object or even fear as strongly as immobile parents their children's return – and, in fact, downward mobility – to parent's class origins. Based on this argument, we would expect a general inheritance effect across all grandparental classes.

Third, multigenerational class persistence could result from the intersection of other dimensions of durable inequality with class membership. Tilly (1998) argued that all forms of long-term inequality are based on categories which allow social groups to monopolize opportunities at the expense of other groups by means of category-based exploitation and social closure. Empirical assessments of categorical inequality largely focus on persistent wage differentials due to gender or race (Morgan & McKerrow, 2004; Tomaskovic-Devey, Avent-Holt, Zimmer, & Harding, 2009). We concentrate here on the persistence of class membership due to ethnic and racial categorization. Therefore, the idea is that the unequal distribution of access to positions and their rewards is stabilized and legitimated by implicit or explicit referencing of categorical distinctions based on ethnicity or race. If class membership intersects with these readily identifiable categorizations, categorical inequality could be gradually replaced or amplified through class-specific constraints on mobility opportunities effectively becoming instances of cumulative (dis)-advantages (DiPrete & Eirich, 2006). This third mechanism of overlapping racial or ethnic discrimination with social class membership should result in particularly strong barriers to upward mobility for parents and children originating from working classes. These barriers should weaken or even diminish once we restrict the sample to whites in the U.S.A. and native Germans in Germany.

We are not able to test these three different mechanisms directly and in comparison to each other. However, the pattern of grandparental effects can be interpreted against this theoretical background. In any case, we believe they suggest reasons for why a grandparental effect can be expected. Given the retrospective approach to multigenerational mobility employed in this paper, we are more in favor of the second and third explanation, as the first argument about resource flows rests on the assumption of the presence and proximity of grandparents, whereas the second and third argument would still work even if the grandparents died before the child came to age. Up to now, there have not been many theoretical explanations for or research on the mechanisms underlying patterns of social fluidity (Goldthorpe, 2007, pp. 154-188).

### 2.3 Cross-country variation of three-generational class associations

Each of the three proposed explanations for potential three-generational associations is contingent on national institutions. Hence, cross-country variation can be expected to the extent that significant institutional settings differ. First, the direct transmission of economic resources from grandparents to children may differ with regard to inheritance laws and tax regulations (Mare, 2011). Moreover, the "purchasing function" of grandparental wealth with regard to children's educational outcome is certainly lower in the Germany when compared to the U.S. (Pfeffer, 2011; Pfeffer & Hällsten, 2012). Second, grandparents' social and cultural capital effect should vary across countries according to the prevalence of either legacy admission or meritocratic selection in the (higher) educational system. The prominence of highly selective private colleges could more frequently indicate the presence of legacy admission systems in the U.S. than in Germany (Kahlenberg, 2010). In total, we expect institutional differences to favor the importance of resources for three-generational mobility patterns in the U.S..

With regard to the role of the grandfather's position as reference frame, we expect variation due to the prevalence of institutions that foster work-centered and class-based identities. Such institutions, like unions, may amplify multigenerational persistence or counter-mobility by stabilizing reward expectations across multiple generations. Additionally, they may impede mobility strategies leading away from class origins by increasing the social proximity of classes across three generations. Their lack, on the contrary, possibly results in larger differences between past and future prospects and induces cultural distance, which may divert mobility strategies to other class destinations. Contrary to the U.S., the German political economy is in fact characterized by a stable system of industrial relations (Hall & Soskice, 2001). Hence, expectations and, in fact, the class structure itself are comparatively stable (Esping-Andersen, 1993, 2000). Moreover, the prevalence of unions and a rigid educational system in Germany foster long-term craft- and trade-based identities and divert working-class children from higher education (Mayer, Müller, & Pollack, 2007; Neugebauer & Schindler, 2012). In the U.S., on the contrary, work-centered and class-based institutions such as unions have continuously lost significance in matters of wage determination and group affiliation (Massey, 2007, p. 160ff.). In fact, the U.S. is one of the few capitalist democracies without a labor party. A possible cause for high levels of counter-mobility across three generations in Germany may also result from the disastrous consequences of WWII. The mass displacement of ethnic Germans, mainly in Prussia, and the destruction or dismantling of industrial complexes forced parents out of their occupations and hence might have increased the

systematic counter-mobility of children back to their grandparental class origins (Müller & Pollak, 2004).

Finally, three-generational mobility barriers due to durable categorical inequalities depend on the existence of a racially or ethnically segregated class structure. Immobility in Germany could result from categorical inequality with respect to immigrants. Ethnic minorities from Turkey, Southern European, and Northern African countries are crowded in precarious working conditions in low-grade manual occupations (Kogan, 2003). Racial discrimination, low educational attainment, and policies that aim at institutional segregation foster class immobility and the low occupational attainment of immigrants (Brubaker, 2001; Kearney, 2006). Racial and ethnic segregation is even stronger in the U.S.. High degrees of racial segregation and discrimination exist in the legal and education systems as well as the housing and labor markets (Alexander, 2010; Kahlenberg, 2010; Massey, 2007). These may result in particularly strong three-generational immobility on the part of African Americans and Latinos, who are permanently assigned to the lowest classes on the basis of their skin color (Yamaguchi, 2009). The most significant three-generational effect in the U.S. might therefore be one of cumulative disadvantage as an effect of persistent racial discrimination.

The discussion of cross-country variation in three-generational associations leads us to expect different patterns in both countries. While the institutional setting favors the role of resources for three-generational class inheritance in the U.S., the German political economy strengthens multigenerational associations through stabilizing the reference frames for mobility decisions across three-generations. Finally, we expect strong disadvantages across three generations in both countries due to categorical inequality based on race in the U.S. and ethnicity in Germany.

## 3. Data and concepts

Cross-country comparative two-generational mobility research is often based on the analysis of large cross-sectional data sets. With regard to three-generational mobility research, however, a cross-sectional survey design may become problematic when occupational information on multiple preceding generations is collected retrospectively from respondents. Poor memory or simple lack of knowledge about grandparental occupation may induce severe bias. Therefore, panel data with a mixture of prospective and retrospective occupational information seem to be a good alternative for the analysis of three-generational mobility, especially if, as for our cases, other large data sets are not available. The empirical analyses are therefore based on data from two nationally representative household panel studies: the

German Socio-Economic Panel (SOEP) and the US-American Panel Study of Income Dynamics (PSID) (McGonagle, Schoeni, Sastry, & Freedman, 2012; PSID, 2013; Wagner, Frick, & Schupp, 2007). These household panels follow originally sampled households and their split-offs, collecting a wide array of data on the socio-economic positions of all household members, including education and occupations as well as retrospective data on parents' occupational attainment. With increasing numbers of waves of data collection, it becomes possible to construct three-generational samples of respondents.

Research in social inequality and two-generational social mobility repeatedly draws attention to the problem of gender segregation in modern societies (Beller, 2009; Oesch, 2006). In this paper, we restrict ourselves to the study of male patrilineal lineages – i.e. lineages composed of grandfathers, fathers, and sons (Figure 1) – in order to avoid mixing three-generational class and gender-based associations. There are reasons to assume that matrilineal grandfathers exert a greater influence on the social mobility of children (Chan & Boliver, 2013a). We analyze data only from the patrilineal line because we are exclusively interested in social mobility processes across three generations. Following Chan and Boliver's proposition would mean to mix occupational attainment processes between parents and children on the one hand and marriage mobility between grandfathers and their in-laws on the other hand. Hence, we chose to analyze only "pure male," i.e., patrilineal, lineages. The analysis of social mobility within matrilineal lineages or across sexes, however, is a significant and interesting subject for future research.

[Figure 1 about here]

Our samples consist of all men (C) in both surveys for which we have information on their and their fathers' (P) and grandfathers' (G) occupational positions. In total, our analyses are based on the lineages of 2,010 U.S. men and 3,433 (West) German men. Their lineages span most of the last century. Grandfathers were born on average around WWI (median birth year 1923 in the U.S. and 1916 in Germany), fathers around WWII (1945 and 1949, respectively), whereas sons enter the stage on the advent of neoliberalism (1972 and 1978). The World Wars and depression era, Jim Crow, the "golden twenties," the long post-WWII boom, and the fall of the Berlin Wall are just some of the main historical events that shaped the occupational trajectories of the three generations. The average distance between any two succeeding generations ranges between 22 to 33 years.

We combine both prospectively and retrospectively collected data on parents and their adult children with the data on grandparents. We used several sources of occupational data to assign

class positions, namely, prospectively observed positions at different age points (e.g., age 35, younger than 30, older than 40) as well as different retrospectively recorded biographical sources (e.g., information on job while child grows up, first paid job, last job).[2] In total, the class position of 32.0% of fathers (P) and 93.5% of grandfathers (G) in the US sample and 69.0% (P) and 99.8% (G) in the German sample were coded based on retrospective data.

Consequently, the age at which we recorded occupational data varies between generations as well as surveys. In order to compare the age ranges in which class was assigned, we calculate the mean age and its standard deviation in each generation.[3] The grandfathers' (G) occupational position is on average recorded at age 43 (sample standard deviation s≈9 years) in the US and at age 46 (s≈7) in the German sample. Fathers' (P) and sons' (C) positions are observed on average at ages 39 (s≈9) and 29 (s≈8) in the US and at ages 44 (s≈8) and 25 (s≈9) in the German samples, respectively. Whereas grandfathers and fathers occupations are recorded around age 40, i.e., generally at the peak of their careers, the sons are sampled at a rather young age in the initial phase of their careers.[4] Hence, multigenerational mobility rates based on the sons could be inflated by low initial employment and disguise class inheritance, which unfolds only later in life. As such, our data are biased against discovering a three-generational effect and should therefore be taken as a rather conservative test of its existence, especially in Germany. Additionally, we have to be careful with the interpretation of strong cross-country difference, which could at least partially be due to our data because both samples differ with regard to the weight of prospective and retrospective sources. We continue to discuss data issues below in the concluding remarks (Section 5). All in all, generations are, with regard to the average year of birth as well as the age in which class position was recorded (with the possible exception of the German generation of sons [C]), quite comparable between countries.

We operationalize class position by means of the well-known EGP schema (Erikson & Goldthorpe, 1992; Erikson, Goldthorpe, & Portocarero, 1979; Goldthorpe, 2007, pp. 101-124). In order to avoid problematic sparse cells in later analyses, we collapse the original eleven classes into a vertically-differentiated four-class version comprising the service classes (original EGP annotation: I+II), an intermediate class of non-manual routine workers and

[2] We used the same coding procedure in all generations and countries to minimize distortions. The class position was assigned on basis of the following hierarchy: (1) occupation at age 35, (2) occupation when respective child (either P or C) grew up, (3) last prospectively observed occupation after age 40, (4) last retrospectively recorded occupation (only SOEP), (5) first prospectively observed occupation before age 30, (6) first retrospectively recorded occupation (only SOEP).

[3] To do so, we derive the age of fathers and grandfathers for which class positions were retrospectively coded from the year of birth of respondents and the one of their father as well as the age of respondents for which occupational positions of fathers are recorded in each survey (SOEP: age 15, PSID: around age 12).

[4] We excluded students from the analyses.

small self-employed entrepreneurs and farmers (IIIab+IVabc), and a skilled (V+VI) and an unskilled manual working class (VIIab). Although we obtain a heterogeneous intermediate class by collapsing the routine non-manuals with the petty bourgeoisie, we are consistent with regard to the vertical differentiation of the EGP schema (Erikson & Goldthorpe, 1992, p. 44f.). However, we refrain from including the skilled manuals in the intermediate class because we believe that interesting cross-country differences between this class and other intermediate but non-manual classes exist in both countries. While the EGP classes are provided by the SOEP survey group as part of the standard data release, we had to construct it for the PSID data. For most of the recoding procedures, we relied on the work of Morgan and McKerrow (Morgan & McKerrow, 2004).[5]

## 4. Empirical findings

The three-generation-samples we constructed do not contain representative sub-samples of each generations' occupational distribution because they are potentially biased due to panel attrition, selective fertility, immigration flows, and missing data (Duncan, 1966). Thus, we do not study complete cohort replacement, but take the generation of children as a given population and analyze the impact of their antecedents' class positions. Representativeness is further limited because both panels include oversampled populations, mainly ethnic German immigrants and African Americans in the U.S. However, this oversampling allows for the testing of particular effects of ethnic or racial segregation according to hypothesized categorical inequalities. We do not use any weights because samples are drawn from all survey waves and pooled across time.

### 4.1 Evolution of class distributions across generations

The change of class distributions across the three generations (Figure 2), although not representative as explained above, nevertheless seems to represent roughly the change of the occupational structure in both societies, given that we restrict ourselves to male lineages

[5] We could use their coding procedures only as a guiding device for US occupational data. Morgan and McKerrow coded 1980 Census Occupational Classification codes (COC) into EGP classes. The occupational data available in the PSID, however, is coded in 1970 and 2000 COCs (PSID, 1999). While 1980, 1990 and 2000 COCs are rather similar, there are quite a number of 1970 COCs, most importantly "managers, not elsewhere classified," which have more than one equivalent in the 1980 COCs. Hence, Morgan and McKerrow and official crosswalks of the U.S. Census Bureau are rather cautious about reconciling 1970 and 1980 COCs (Bureau, 1989). However, there are at least two reasons why we belief that our class schema does not bias our results unduly. First, collapsing the high and the low service class minimizes distortions due to the ambiguous "manager, not elsewhere classified" category. Second, the longitudinal nature of the PSID data allowed us to use several data points to code an individual's job. Hence, we used more concrete occupational titles from surrounding years to replace ambiguous occupational classifications if both codes belonged to the same occupational group. Furthermore, all coding operations were cross-checked by referring to the O*NET database, which provides information on mean income, educational attainment, and, most importantly, performed tasks in an occupation.

(Oesch, 2006; Oesch & Rodríguez Menés, 2011; Wright & Dwyer, 2003). Moreover, cross-country differences reflect the respective institutional setting and history of each economy.

[Figure 2 about here]

The US class distributions are more heavily characterized by ongoing urbanization than the German ones. The strong decrease of intermediate class positions between grandfathers and fathers is almost completely due to the disappearance of small farm holders in the U.S. (around 20% of grandfathers but only 4% of fathers are in class IVabc in our US sample). Between grandfathers and sons, service classes expand from 19% to 33% in the U.S. and from 17% to 33% in Germany, while working classes decline from 54% to 52% in the U.S. and from 66% to 53% in Germany. We further find that the composition of the working class differs in both countries according to their institutional settings. In all three generations, skilled manual workers dominate the German "artisanal economy" (Streeck, 1991). These skills are supplied steadily through vocational training and in demand from the high-quality production system. The prevalence of unskilled workers in the U.S., on the contrary, reflects the long tradition of U.S. employers to rationalize production in order to reduce the demand for skilled labor (Thelen, 2004). The shift from a manual-industrial to a white-collar, post-industrial workforce is less accentuated but still recognizable in sons' class distribution. The lack of a more pronounced expansion of service classes on the one hand and working class contraction on the other is arguably due to the younger life-course stage in which we observe the class positions of sons. It is likely that there will be further career mobility from skilled manual positions into service class positions in both countries.[6]

4.2 Absolute mobility patterns in both countries

We now consider outflow mobility flows from fathers (P) to sons (C) separated by grandfathers' (G) class (Figure 3). The left panel in Figure 3 shows outflow rates for the U.S. sample, whereas the right panel presents the respective rates observed in the German sample.[7] We find that grandparental influence on sons' outflow rates is rather limited in both countries. We also observe that the heterogeneous intermediate class is characterized by comparatively low levels of two-generational inheritance (with the noteworthy exception of the case in which all three generations are in that class).

[Figure 3 about here]

[6] Skilled manual workers comprise not only artisans and craftsmen (VI) but also supervisors of manual workers and lower-grade technicians (V) (Erikson, et al., 1979, p. 420).
[7] The corresponding percentages can be obtained from the online supplement (Tables 1A & 2A).

In both countries, immobility across three-generations is most frequent in the service classes. For example, about 55% of both Americans and Germans, whose grandfathers and fathers have been in the Service classes attain a similar class position themselves (see uppermost bar in both graphs in Figure 3). Moreover, class reproduction is also marked among intermediate and unskilled manuals in the U.S., though less so in Germany. We also find that individuals whose grandfathers have been in the service classes are in both countries more likely to be upwardly mobile in the service classes compared to individuals who share the same parental-origin class but whose grandfathers worked as skilled or unskilled manuals. Thus, absolute counter-mobility into the services classes is more likely than upward mobility across three generations. With regard to barriers, however, grandparental influence seems to be rather modest in both countries. Differences in long-range upward and downward mobility rates between unskilled manual and service classes differ across grandparental classes by at most 3.4 and 5.1 percentage points in the U.S. and at most 1.2 and 2.7 percentage points in Germany. The difference in percentage point variation, however, points to stronger barriers in Germany, preventing two-generational long-range upward mobility across all grandparental origins (Erikson & Goldthorpe, 1992, p. 149f.; Kocka, 1980). Further, we find that, in Germany, upward mobility from unskilled into skilled manual classes is relatively high and fairly stable across most grandfathers' classes. These mobility flows could reflect upward mobility opportunities due to Germany's dual system of vocational education and apprenticeships (Thelen, 2004). However, absolute mobility rates depend on the relative size of origin and destination classes, and cross-country differences could represent the greater importance of unskilled manuals in the U.S. and skilled manuals in Germany, respectively. Therefore, we continue with analyzing the relative mobility chances net of structurally induced effects.

### 4.3 Relative multigenerational mobility in the U.S. and Germany

In the remaining part of the paper, we analyze patterns of multigenerational fluidity in both countries. We follow the standard approach of log-linear analysis of mobility tables. We test various models that represent particular patterns of relative mobility chances or country differences (Breen, 2004b; Goodman, 1969, 1972, 1984; Hagenaars, 1990). In the initial step, we compare nation-specific models in order to determine whether grandparent's class position impacts children's class (GC) independent of the two-generational associations (GP and PC). Furthermore, we are interested in the differences or similarities of the patterns and the relative strength of two-generational (GP and PC) and three-generational effects (GC). Therefore, we do not search primarily for the best-fitting model, but rather concentrate on the existence and

interpretation of three-generational associations. In the final step, we merge nation-specific mobility tables into a four-dimensional table (including N for Nation) and evaluate whether two- and three-generational associations are similar or different across countries. Again, we have chosen to concentrate on the comparison of two- and three-generational associations between countries.

The models and their fit statistics are presented in Tables 1 and 2. In order to evaluate each model's fit and compare the different suggested explanations for the observed mobility patterns, we provide a range of fit statistics: the overall deviance of the estimated compared to the observed mobility tables ($G^2$) along with degrees of freedom (df) and p-values, the relative deviance reduction compared to the model of independence ($rG^2$), the dissimilarity index measuring the difference between cell counts in the observed and the estimated mobility table (DI), and, finally, the Bayesian Information Criterion based on the deviance of the model (BIC) (Breen, 2004b; Raftery, 1986, 1995).[8] We further compare nested models in the text and in Table 3. We test whether an increase in model fit ($\Delta G^2$) warrants the loss of degrees of freedom ($\Delta df$). Contrary to the global tests comparing estimated and observed tables, small p-values ($p < 0.05$) indicate that there is a significant improvement in model fit given the additional loss of degrees of freedom.

[Table 1 around here]

*Is there a grandparental effect?*

We start our analysis by focusing on the question whether a direct effect of grandfathers on sons (GC) on top of the two-generational effects GP and PC is needed to understand the three-generational mobility table (Tables 1 and 2). A first set of models including only one of the three interactions (Models II-IV) clearly shows that none of these models provide a good fit for the data. Interestingly, Model IV, which accounts only for the three-generational association (GC), fits almost as poorly as the independence model (Model I) in both countries, suggesting that most of the mobility we observe is in fact two-generational. In the next step (Models V and VI), we assume that the multigenerational mobility process is to be understood as a first order Markov chain. Model V assumes that the adjacent mobility processes between grandfathers and fathers (GP) and between fathers and sons (PC) can account for the entire three-generational mobility table. Model V shows an acceptable fit indicated by a small BIC and a p-value greater 0.05 in the U.S. and in Germany. Model VI further assumes that the

[8] We estimated the log-linear models using the gnm and glm packages implemented in the freeware program R (R Core Team, 2013; Turner & Firth, 2012)

parameters ruling the two-generational associations GP and PC are the same. Although more parsimonious, according to BIC, both DI and G2 indicate a weak fit compared to the observed table. Thus, although we prefer Model V over Model VI, we note that a basic similarity between GP and PC is at least likely.

[Table 2 around here]

Finally, we model our hypothesis of a grandfather effect by including all three intergenerational associations (i.e., GP, PC and GC; Model VII). In both countries, this model fits the data better with regard to the relative deviance reduction and DI; however, according to BIC, the more parsimonious Model V is preferable. Because Model V is restricted with respect to Model VII, we can formally assess whether the additional parameters contribute significantly to model fit. In the U.S., the $G^2$ reduction, due to the additional GC parameters by nearly 40%, indicates a significant improvement of model fit ($\Delta G^2_{V\text{-}VII}$=18.7, $p_{V\text{-}VII}$-value=0.027) given the loss of 9 degrees of freedom. The same is true for Germany, where Model VII significantly improves the fit if compared to Model V ($\Delta G^2_{V\text{-}VII}$=19.0, $p_{V\text{-}VII}$-value=0.025). The deviance reduction due to the GC parameters amounts here to ((36.3-17.3)/36.3=) 52.4%, while misclassification is halved. We conclude that, in Germany and the U.S. alike, Model VII is in fact the best representation of our multigenerational mobility table.

*What does the grandparental effect look like?*

In order to better understand the nature of the three-generational association, we inspect all association parameters obtained from Model VII in more detail (Figure 4). Each of the 16 plots in figure 4 represents one origin-destination combination. Within each plot, GP, PC, and GC parameters are indicated by squares, circles and triangles respectively. Filled symbols refer to the association strength in the US mobility table and hollow symbols refer to the parameters for the German table. We use effect coding and show logged parameters and their 95% confidence intervals for all two-way interactions. A positive $GC_{OD}$ effect therefore indicates that individuals, whose grandfathers have been in origin O, are more likely to enter destination D compared to the average across all OD combinations.

[Figure 4 around here]

Before we analyze the parameters of the GC effects, we start by comparing the two-generational association parameters (GP and PC). It is important to note that the interpretation of the GC effect is possible only in comparison to GP and PC. The patterns that we obtain from Model VII reflect the well-known pattern of relative mobility chances (Erikson &

Goldthorpe, 1992; Hout, 1988). Significant positive association parameters in the plots on the diagonal, but especially within the service class on the one hand and the working class on the other hand, reflect the two-generational inheritance effect. On the contrary, negative association parameters between service class origins and working class destinations and vice versa indicate the distance between both extremes of the class hierarchy. However, interesting differences occur when we compare class reproduction and class barriers across generations (i.e., GP compared to PC, although it is important to note that parameters do not result from representative cohort data) and countries. At first glance, these effects seem to be stronger for the GP association than for the PC association, indicating that, for our sample of sons, class reproduction and class barriers seems to decline over generations. However, this does not hold for the unskilled working class, and hides important country differences. In the U.S., the decline of class reproduction in the service class clearly contrasts with an increase in class reproduction in the unskilled manual class. In Germany, class reproduction is almost stable at both ends of the class structure. Moreover, barriers to the upward mobility of unskilled workers into the service class do increase over generations in both countries, whereas the protection from long-term downward mobility weakens for both countries.

Turning to the GC effect, parameters are generally smaller compared to GP and PC, but share the latter's algebraic sign. Deviations from this rule occasionally occur if (either or all) effects are insignificant. Most of the GC parameters are not statistically different from zero in both countries, indicating that the grandparental effect does not operate regularly across the entire mobility table. However, there are eight statistically significant GC parameters in both countries, although half are only significant if we accept a 10% error margin.[9] In both countries, $GC_{11}$ and $GC_{33}$ are significantly positive, thus reflecting the inheritance within the service classes and the working classes. In the U.S. specifically, the $GC_{44}$ effect reflecting class reproduction in the unskilled manual class is significantly positive as well. Thus, individuals whose grandfathers have worked in either of these classes are likely to stay in or reenter these classes across all parental classes (hence, including class reproduction across three generations as well as counter-mobility). We also find a three-generational inheritance effect $GC_{22}$ in the intermediate class in the U.S., but not in Germany. This might be due to the smaller share of farmers and self-employed in this class in Germany as compared to the U.S. and the lower degree of self-reproduction of routine non-manuals. Given that the respective two-generational effects are positive as well, we observe that, in fact, three-generational inheritance operates on top of and in the same direction as the two-generational as two-

[9] Parameter estimates are provided in the online appendix to this article (Table 3A).

generational inheritance: basically, along the diagonal. Though we do not find any significant GC parameter off the diagonal in the U.S., we do find two for Germany. The negative $GC_{41}$ and $GC_{13}$ ($\alpha$=0.10) parameters reflect the barriers preventing three-generational mobility between the service classes and the working classes. Although not statistically significant, we find that the parameters for downward mobility for the service classes into the working classes are negative in both countries.

*What do we learn from these patterns?*

Our results lend at least some support to all of the three mechanisms of three-generational mobility discussed above. First, we do find a significant effect for service class reproduction across three generations independent of the father's class in both countries. In fact, this is the only parameter of the GC effect that meets the usual criteria of significance at a 5% level in both countries. This effect of self-reproduction corresponds to the protection of downward mobility into the working classes for sons originating from service class grandfathers independent of father's class, although this protection effect is not significant. The expectation that this mechanism should be stronger in the U.S. than in Germany is, however, not confirmed by our results. For this comparison, it is important to note that we cannot simply compare the GC effect without considering GP and PC at the same time. We do find that $GP_{11}$ is higher in the U.S. than in Germany, but $PC_{11}$ and all other relevant parameters do not point towards stronger self-reproduction and downward mobility protection of the service classes in the U.S.. Of course, this might be due to the fact that the service classes might be too broad a category for a particular elite self-reproduction effect to show up.

Second, we also find support for a tendency towards self-reproduction across three generations for all social classes, except for the intermediate class in Germany, and with the reservation that most of these parameters are not significant at a 5% level. This result confirms the hypothesis that the grandfather's social class might affect the mobility decisions of sons independent from the father's class. Again, the expectation that this mechanism should be stronger in Germany as compared to the U.S. remains unconfirmed.

The third hypothesized mechanism refers to stronger working class self-reproduction and upward mobility barriers due to durable inequalities. Here, we do find first suggestive evidence for immobility in the working classes across three generations. Whereas the parameter of self-reproduction across three generations is significant at a level of 10% in both countries, we find an even stronger effect for the unskilled working class in the U.S., but no such effect in Germany. In Germany, rather, we observe a particular barrier to long-term

upward mobility out of the unskilled manual class. This might be due to the fact that there is more upward mobility of unskilled workers into skilled (manual or intermediate) positions, but not into higher positions of the service classes. Because both countries are characterized by large ethnic and racial minorities in the working classes, it seems plausible to at least indirectly test the hypothesis of durable inequality.

[Figure 5 about here]

*Assessing the role of race or ethnicity*

For this purpose, we repeated our former analyses but restricted the samples to 1,492 white American and 2,992 non-immigrant German lineages, thus excluding ethnic minorities from the sample.[10] We expected the grandparental effect for the self-reproduction and mobility barriers of the working classes to diminish. We recalculated Model VII, the effect parameters of which are shown in Figure 5.[11] Inspection of the association parameters yields some interesting differences between the full and the restricted mobility tables, though, overall, these differences are rather small. Whereas the parameter $GC_{44}$ indicating the self-reproduction of the unskilled working class across three generations is not significant anymore in the U.S., the barrier to upward mobility into the service class ($GC_{41}$), although reduced, remains significant in Germany. Other minor differences when comparing Figures 4 and 5 relate to parameters of GP and PC effects for the U.S.. We now find slightly more upward mobility of sons of unskilled fathers into skilled positions in the U.S. ($PC_{43}$) and slightly more protection of downward mobility from service into skilled manual ($GP_{24}$) and intermediate into unskilled manual positions ($GP_{13}$).

These results, therefore, do at least partially support the hypothesis of categorical inequalities in the U.S. The small and insignificant inheritance effect of white unskilled manuals points to particularly high immobility among black Americans in similar class positions. Although, mobility barriers and most inheritance effects exist similarly in both countries' restricted and full samples, our test cannot rule out the fact that minorities experience higher mobility barriers across three generations. The number of non-white and migrant lineages in our sample is too small to directly test for categorical inequality. Therefore, we conclude that three-generational associations, especially in the U.S., may be enforced by long-term social

[10] The restricted samples consist of 74% of all U.S. lineages and 87% of all German lineages. Lineages were selected according to the race or ethnicity of sons (C).

[11] Based on the restricted samples it turns out that Model VII which includes GC in addition to GP and PC becomes less preferable over Model V (which only includes GP and PC). However, this might also be due to the lower sample size. Model statistics and parameter estimates are provided in the online appendix to this article (4A & 5A).

closure on the basis of noticeable racial or ethnic characteristics (Hout, 1984; Yamaguchi, 2009).

*Cross-Country differences of multigenerational mobility*

We now proceed with the analyses of cross-country differences in mobility patterns. For this purpose we constructed a 2*4*4*4 mobility table combining the two national GPC mobility tables into a four dimensional table with N denoting the nation (Table 3). We test whether both countries experience a common multigenerational mobility pattern. Model I is the independence model of perfect mobility, accounting only for nation- and generation-specific distributions. Model II assumes no differences between all three intergenerational effects across both nations (GP, PC and GC). Model III assumes that the common mobility table is governed by country specific associations between grandfathers and fathers (NGP), as well as fathers and sons (NPC), but common (i.e., not nation-specific) GC associations. Model IV, finally, assumes that the associations between grandfathers' and sons' class positions are nation-specific as well (NGC).

[Table 3 about here]

Both the model of independence (I) and the model of no difference (II) do not fit the data sufficiently. Only if we allow nation-specific, two-generational association parameters (Model III including NGP and NPC) do we reach a satisfactory fit. The comparison of fit between Model III and Model II suggests that the assumption of country specific two-generational associations significantly increases model fit. However, Model IV, which also includes country-specific parameters for the three-generational effect (NGC), does fail to significantly improve model fit when compared to model III (the three rightmost columns in Table 3). Therefore, we conclude that three-generational mobility is indeed less country-specific than we claimed based on the institutional differences and the country analysis. The more detailed inspection of the effect parameters of the NGC association derived from Model IV actually underlines the basic similarities in mobility chances between both countries. There are no substantial differences between patterns of the GC effect of both countries. Thus, the analyses of the combined mobility tables reconfirm the results from the previous study of country-specific mobility tables. We conclude that three-generational dependencies exist in both countries and that their pattern is indeed comparable.

## 5. Conclusion & Discussion

This paper focuses on the analysis of multigenerational mobility chances in the U.S. and Germany. Previous research on three-generational mobility has established the existence of dependencies between grandparents' and grandchildren's class position in most if not all studied countries (Beck, 1983; Chan & Boliver, 2013a; Goyder & Curtis, 1977). The strength of the three-generational associations and the pattern of relative class mobility, however, seem to differ between countries.

We suggest three explanations for the existence of three-generational relative mobility chances. First, we consider the role of class-specific resources for mobility strategies. Second, we suggest a more general explanation by integrating the grandparent's class into the reference frame for mobility decision. Third, we argue that multigenerational dependencies of class mobility could be the result of categorical inequality, in particular when they are based on race or ethnicity. Given that all three potential mechanisms of multigenerational mobility effects are dependent on a country's institutional setting, we opt for a comparative analysis.

We chose the U.S. and Germany as two least similar cases and use data from the US-American Panel Study of Income Dynamics and the German Socio-Economic Panel to study three-generational mobility chances. Based on institutional differences, we expect three-generational fluidity to be higher in the U.S. – perhaps even to the extent that there is no three-generational association at all – and lower in Germany.

The study of absolute mobility rates, in fact, documents that the influence of grandfathers' class position is rather limited in both countries. Class inheritance is particularly frequent if grandfathers have been in the service and working classes. However, we do find strong differences between both countries, particularly with respect to the working classes. Across all generations, the German working class is dominated by the skilled manual class, which is a frequent destination for downward as well as upward mobility. The American working class, on the other hand, is dominated by unskilled manuals that are immobile even across three generations.

Log-linear analyses of mobility tables, however, yield no large cross-country differences of relative mobility chances. We initially establish that three-generational associations do exist in both countries and significantly contribute to an understanding of the mobility tables. Our findings indicate that two- and three-generational effects are rather similar within countries, though the strength of the association differs. Three-generational associations are considerably weaker compared to either of the two-generational associations. Furthermore, we observe significant three-generational immobility in both countries within the service and

manual classes. However, three-generational inheritance in the intermediate and unskilled manual class is only significant in the U.S. In Germany, though not in the U.S., we further find significant barriers preventing mobility between the service and the working classes. However, the joint analyses of the U.S. and German mobility tables reveal no significant difference for the three-generational associations. In spite of the institutional differences between the two countries, the similarities of relative mobility patterns clearly outweigh country-specific mobility barriers or mobility channels across three generations.

From these results, we may infer that there is a common pattern of relative mobility across three generations in industrialized countries. This hypothesis must still be tested on the basis of a comparative analysis for more than two countries. In any case, our results lend rather mixed support for the three suggested explanations. First of all, we argued that these explanations refer to mechanisms that should vary with respect to the institutional setting. Although we found the expected strong three-generational barriers between service and working classes in Germany but not in the U.S., the overall relative mobility patterns are quite similar. Second, with respect to the resource-based explanation, we expected, and found, evidence for particularly pronounced class immobility in the service classes in both countries. In fact, our findings suggest that the abundance of resources allow immobility at the top across three generations. Third, this inheritance effect is in general not only caused by racial or ethnic inequality, as predicted by the hypothesis of categorical inequality. In the U.S., however, a land in which racial inequalities are particularly strong and long-lasting, we found evidence that three-generational inheritance in the lowest classes diminishes if only whites are concerned. Finally, the data does to some extent support the idea that that grandfathers' class is in general an important reference for mobility decisions because multigenerational immobility prevails in most social classes. In fact GP, PC, and GC effects point almost always in similar directions.

The observed working class immobility points towards class-cultural cleavages between the manual and higher non-manual social classes that exert their influences across multiple generations. This may result from class-specific cultural orientations towards child rearing exemplified by the writings of Lareau (Lareau, 2003; Lareau & Weininger, 2008). If parenting styles are transmitted across generations rather than independently from mobility experiences, they provide channels for class-cultural norms bridging multiple generations.

At the same time, our empirical results should be considered with some care. We have three concerns with regard to our data. First, retrospective data on class positions provides only a

proximate measure of grandparent's resources. Thus, we cannot directly assess the influence exerted by grandparents' resource endowments until more prospective data for all generations becomes available. Second, our samples are too small to directly compare mobility chances between different ethnic or racial groups in order to test the hypothesis of categorical inequality directly. Although African Americans and immigrants are oversampled in both panels, the number of three-generational lineages is still too small. Third, the lack of more pronounced class barriers may also result from the young sampling ages of the child generation, especially in Germany. Although most intergenerational mobility is mediated through educational achievement, it cannot be ruled out that the generation of sons in our sample is going to experience further career mobility.

Future research in multigenerational class mobility should compare more countries to assess whether three-generational mobility patterns are truly similar between countries. If the assumption of a uniform social fluidity pattern holds for many countries, we may meaningfully rank countries with respect to the strength of three-generational associations (Erikson & Goldthorpe, 1992; Xie, 1992). Such a ranking may then reflect institutional differences which we were mostly unable to detect. Given that three-generational mobility effects seem to be rather small in size, moreover, larger samples are needed to detect significant differences between countries. On the other hand, large cross-country comparisons may reveal a unique pattern of multigenerational working-class and service class immobility and counter-mobility in industrialized societies, at least for male lineages. Following Mare's proposal, it might be of particular interest to discover whether this holds true for both male and female lineages and for western capitalist and (former) communist societies alike. We are convinced that analyzing mixed-sex lineages, however, requires a theoretical reconsideration of the processes underlying three-generational mobility patterns. It is our belief that such an approach could and in fact has to empirically and theoretically disentangle assortative mating on the one hand and ordinary social mobility on the other hand.

Tables and Figures

Figure 1: Lineages for the analysis of three-generational social mobility

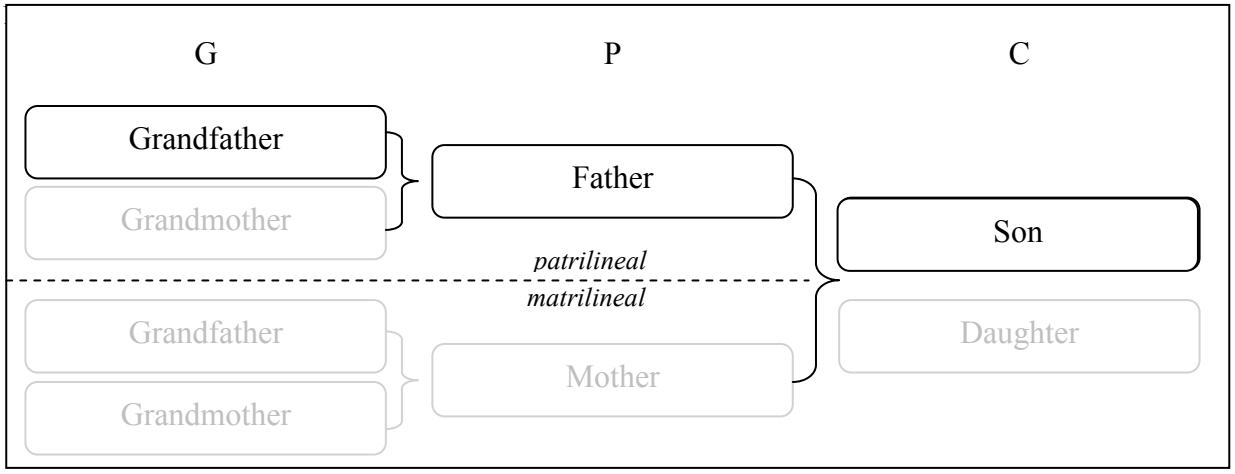
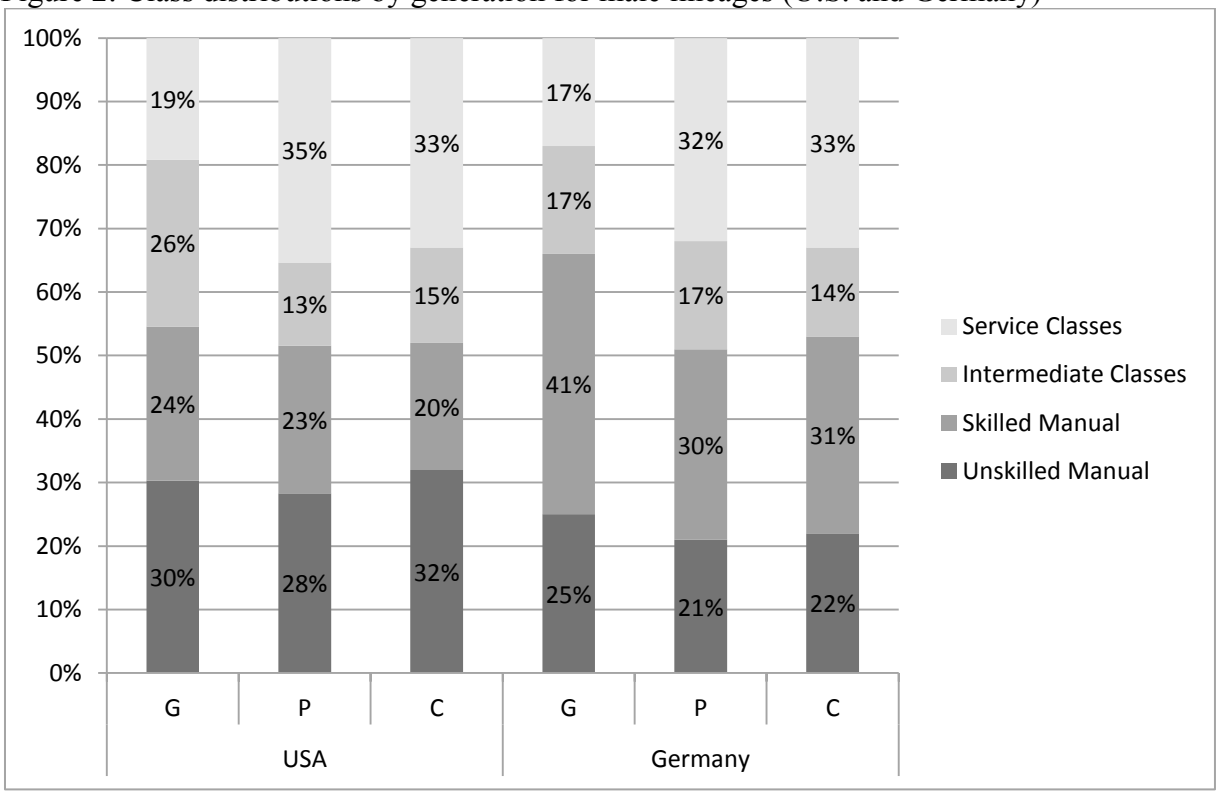
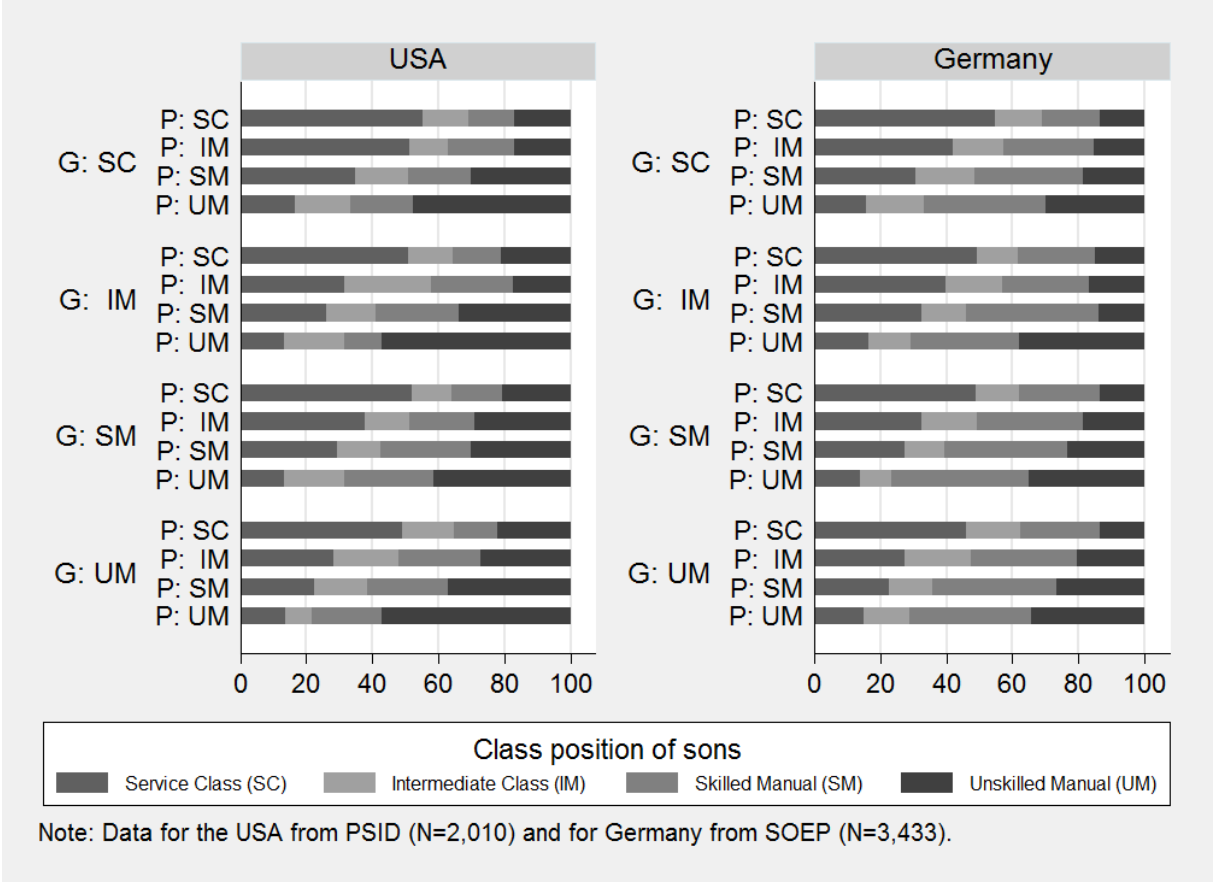



Figure 2: Class distributions by generation for male lineages (U.S. and Germany)




Note: Data for the U.S. is from PSID (N=2,010) and for Germany from SOEP (N=3,433). G=grandfather, P=father, C=son.

Figure 3: Sons' outflow rates by grandfathers' (G) and fathers' class (P) – Male lineages in the U.S. and Germany




Note: Data for the USA from PSID (N=2,010) and for Germany from SOEP (N=3,433).

Table 1: Log-linear models of three-generational social mobility, U.S.

| Model | Parameters | df | $G^2$ | p-value | $rG^2$ | DI | BIC |
|---|---|---|---|---|---|---|---|
| I | **G,P,C** | 54 | 557.3 | 0.000 | n.a. | 21.1% | 146.6 |
| II | **G,P,C,GP** | 45 | 337.9 | 0.000 | 39.4% | 17.3% | -4.4 |
| III | **G,P,C,PC** | 45 | 267.6 | 0.000 | 52.0% | 14.3% | -74.7 |
| IV | **G,P,C, GC** | 45 | 492.8 | 0.000 | 11.6% | 20.8% | 150.5 |
| V | **G,P,C,GP,PC** | 36 | 48.2 | 0.084 | 91.4% | 5.5% | -225.6 |
| VI | **G,P,C,GP=PC** | 45 | 81.7 | 0.001 | 85.3% | 7.4% | -260.6 |
| VII | **G,P,C,GP,PC,GC** | 27 | 29.5 | 0.337 | 94.7% | 4.1% | -175.9 |

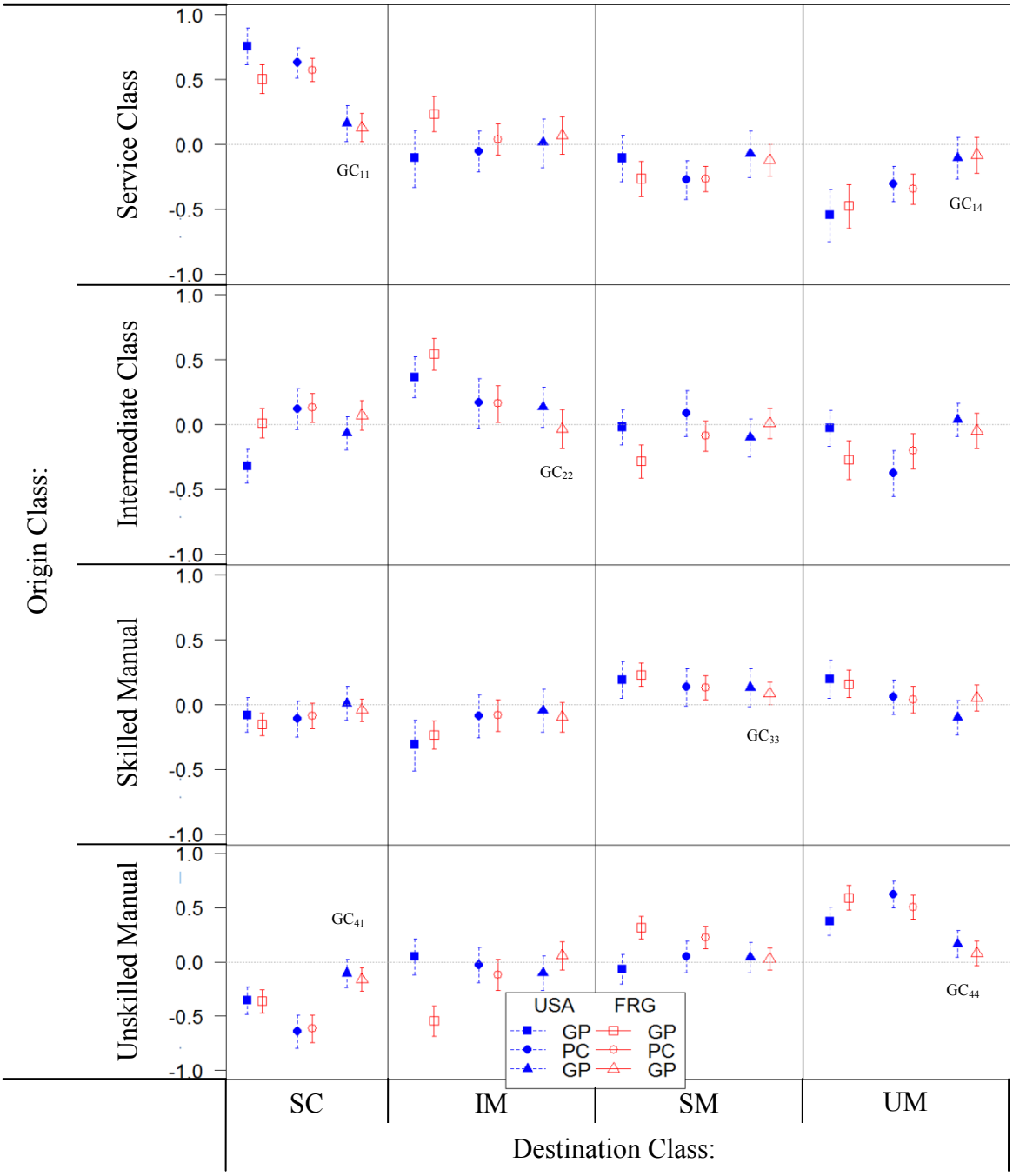
Note: Data for the U.S. from PSID (N=2,010). G=grandfather, P=father, C=son.

Table 2: Log-linear models of three-generational social mobility, Germany

| Model | Parameters | df | $G^2$ | p-value | $rG^2$ | DI | BIC |
|---|---|---|---|---|---|---|---|
| I | **G,P,C** | 54 | 749.5 | 0.000 | n.a. | 19.1% | 309.9 |
| II | **G,P,C,GP** | 45 | 377.6 | 0.000 | 49.6% | 13.8% | 11.2 |
| III | **G,P,C,PC** | 45 | 408.3 | 0.000 | 45.5% | 13.8% | 41.9 |
| IV | **G,P,C,GC** | 45 | 672.7 | 0.000 | 10.2% | 18.2% | 306.3 |
| V | **G,P,C,GP,PC** | 36 | 36.3 | 0.455 | 95.2% | 3.7% | -256.8 |
| VI | **G,P,C,GP=PC** | 45 | 72.7 | 0.006 | 90.3% | 5.1% | -293.7 |
| VII | **G,P,C,GP,PC,GC** | 27 | 17.3 | 0.923 | 97.7% | 2.5% | -202.5 |

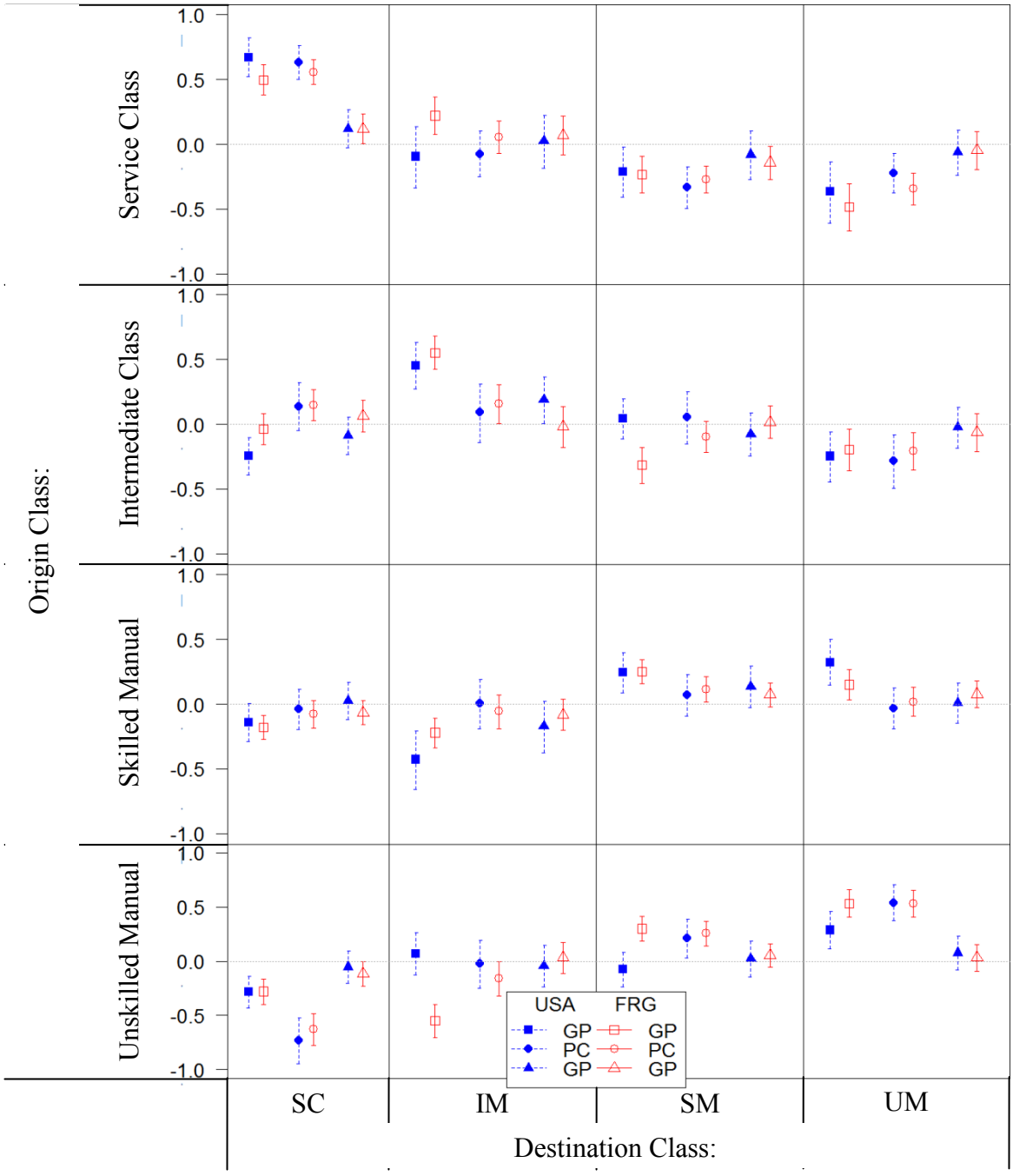
Note: Data for Germany from SOEP (N=3,433). G=grandfather, P=father, C=son.

Figure 4: Association parameters with confidence intervals (95%) from models VII (Table 3 & 5) for Germany and the U.S.




Note: Data for the U.S. from PSID (N=2,010) and for Germany from SOEP (N=3,433). SC=Service Class (EGP annotation: I+II); IM=Intermediate Classes (IIIab+IVabc); SM=Skilled Manual Class (V+VI); UM=Unskilled Manual Class (VIIab). G=grandfather, P=father, C=son. Effect coding, reference is average over all cells of the respective sub-table.

Figure 5: Association parameters with confidence intervals (95%) from models VII (Table 3 & 5) for White Americans and non-immigrant Germans.




Note: Data for the U.S. from PSID (N=1,492) and for Germany from SOEP (N=2,992). SC=Service Class (EGP annotation: I+II); IM=Intermediate Classes (IIIab+IVabc); SM=Skilled Manual Class (V+VI); UM=Unskilled Manual Class (VIIab). G=grandfather, P=father, C=son. Effect coding, reference is average over all cells of the respective sub-table.

Table 3: Log-linear models for cross-country three-generational social mobility in U.S. and Germany

| | | | | | | | Fit relative to Model II | | | Fit relative to Model III | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model** | **Parameters** | **df** | **$G^2$** | **p-value** | **DI** | **BIC** | **Δdf** | **ΔG2** | **p-val.** | **Δdf** | **ΔG2** | **p-val.** |
| I | **NG,NP,NC** | 108 | 1,307.0 | 0.000 | 19.8% | 378.0 | | | | | | |
| II | **NG,NP,NC, GP,PC,GC** | 81 | 123.0 | 0.002 | 5.4% | -573.8 | | | | | | |
| III | **NG,NP,NC, GP,PC, GC, NGP,NPC** | 63 | 56.0 | 0.722 | 3.3% | -485.9 | 18 | 67.0 | 0.000 | | | |
| IV | **NG,NP,NC, GP,PC, GC, NGP,NPC,NGC** | 54 | 47.0 | 0.739 | 3.1% | -417.5 | 27 | 76.0 | 0.000 | 9 | 9 | 0.437 |

Note: Data for the U.S. from PSID and for Germany from SOEP (Total N=5,443). G=grandfather, P=father, C=son, N=nation. Main effects N, G, P, and C are omitted for readability.

Appendix

Table 1A: Outflow percentages from fathers (P) to sons (C) by Grandfather's (G) class, U.S.

| Grandfathers' (G) Class Position: | | | Sons' (C) Class Position | | | | |
|---|---|---|---|---|---|---|---|
| | | | **SC** | **IM** | **SM** | **UM** | **Total** |
| | | **Fathers' (P) Class Position:** | | | | | |
| | **SC** | Service Class | 55.3 | 13.8 | 13.8 | 17.1 | 100.0 |
| | | Intermediate Class | 51.4 | 11.4 | 20.0 | 17.1 | 100.0 |
| | | Skilled Manual | 34.9 | 15.9 | 19.0 | 30.2 | 100.0 |
| | | Unskilled Manual | 16.7 | 16.7 | 19.0 | 47.6 | 100.0 |
| | **IM** | Service Class | 51.0 | 13.4 | 14.8 | 20.8 | 100.0 |
| | | Intermediate Class | 31.7 | 26.0 | 25.0 | 17.3 | 100.0 |
| | | Skilled Manual | 26.0 | 15.3 | 25.2 | 33.6 | 100.0 |
| | | Unskilled Manual | 13.4 | 18.3 | 11.3 | 57.0 | 100.0 |
| | **SM** | Service Class | 52.2 | 11.8 | 15.5 | 20.5 | 100.0 |
| | | Intermediate Class | 37.8 | 13.3 | 20.0 | 28.9 | 100.0 |
| | | Skilled Manual | 29.4 | 13.2 | 27.2 | 30.1 | 100.0 |
| | | Unskilled Manual | 13.3 | 18.2 | 27.3 | 41.3 | 100.0 |
| | **UM** | Service Class | 49.0 | 15.7 | 13.1 | 22.2 | 100.0 |
| | | Intermediate Class | 28.4 | 19.8 | 24.7 | 27.2 | 100.0 |
| | | Skilled Manual | 22.5 | 15.9 | 24.6 | 37.0 | 100.0 |
| | | Unskilled Manual | 13.7 | 7.9 | 21.2 | 57.3 | 100.0 |

Note: Data for the U.S. from PSID (N=2,010). G=grandfather, P=father, C=son. SC=Service Class (EGP annotation: I+II); IM=Intermediate Classes (IIIab+IVabc); SM=Skilled Manual Class (V+VI); UM=Unskilled Manual Class (VIIab).

Table 2A: Outflow percentages from fathers (P) to sons (C) by Grandfather's (G) class, FRG

| Grandfathers' (G) Class Position: | | Fathers' (P) Class Position: | Sons' (C) Class Position SC | IM | SM | UM | Total |
|---|---|---|---|---|---|---|---|
| | SC | Service Class | 54.9 | 14.0 | 17.5 | 13.6 | 100.0 |
| | | Intermediate Class | 41.9 | 15.4 | 27.4 | 15.4 | 100.0 |
| | | Skilled Manual | 30.8 | 17.8 | 32.7 | 18.7 | 100.0 |
| | | Unskilled Manual | 15.8 | 17.5 | 36.8 | 29.8 | 100.0 |
| | IM | Service Class | 49.3 | 12.3 | 23.6 | 14.8 | 100.0 |
| | | Intermediate Class | 39.7 | 17.2 | 26.4 | 16.7 | 100.0 |
| | | Skilled Manual | 32.5 | 13.7 | 40.2 | 13.7 | 100.0 |
| | | Unskilled Manual | 16.5 | 12.7 | 32.9 | 38.0 | 100.0 |
| | SM | Service Class | 48.8 | 13.4 | 24.1 | 13.7 | 100.0 |
| | | Intermediate Class | 32.3 | 16.9 | 32.3 | 18.5 | 100.0 |
| | | Skilled Manual | 27.4 | 12.1 | 37.0 | 23.5 | 100.0 |
| | | Unskilled Manual | 13.8 | 9.6 | 41.5 | 35.0 | 100.0 |
| | UM | Service Class | 46.1 | 16.2 | 24.1 | 13.6 | 100.0 |
| | | Intermediate Class | 27.4 | 20.2 | 32.1 | 20.2 | 100.0 |
| | | Skilled Manual | 22.6 | 13.2 | 37.4 | 26.8 | 100.0 |
| | | Unskilled Manual | 15.1 | 13.7 | 37.0 | 34.2 | 100.0 |

Note: Data for Germany from SOEP (N=3,433). G=grandfather, P=father, C=son. SC=Service Class (EGP annotation: I+II); IM=Intermediate Classes (IIIab+IVabc); SM=Skilled Manual Class (V+VI); UM=Unskilled Manual Class (VIIab).

Table 3A: Association parameters from Models VII (Table 1 & 2) for Germany and the U.S.

| | | U.S. | | | FRG | | |
|---|---|---|---|---|---|---|---|
| **Origin** | **Destination** | **GP** | **PC** | **GC** | **GP** | **PC** | **GC** |
| **SC** | **SC** | 0.755 *** | 0.629 *** | 0.162 * | 0.504 *** | 0.572 *** | 0.131 * |
| **SC** | **IM** | -0.105 | -0.052 | 0.014 | 0.235 *** | 0.038 | 0.070 |
| **SC** | **SM** | -0.106 | -0.272 *** | -0.073 | -0.264 *** | -0.266 *** | -0.120 + |
| **SC** | **UM** | -0.544 *** | -0.305 *** | -0.104 | -0.475 *** | -0.344 *** | -0.081 |
| **IM** | **SC** | -0.319 *** | 0.120 | -0.067 | 0.012 | 0.129 * | 0.071 |
| **IM** | **IM** | 0.366 *** | 0.167 + | 0.133 + | 0.543 *** | 0.162 * | -0.033 |
| **IM** | **SM** | -0.019 | 0.088 | -0.101 | -0.282 *** | -0.088 | 0.010 |
| **IM** | **UM** | -0.028 | -0.375 *** | 0.036 | -0.273 *** | -0.203 ** | -0.048 |
| **SM** | **SC** | -0.081 | -0.109 | 0.011 | -0.153 *** | -0.087 + | -0.041 |
| **SM** | **IM** | -0.308 ** | -0.087 | -0.045 | -0.235 *** | -0.083 | -0.096 |
| **SM** | **SM** | 0.192 ** | 0.137 + | 0.132 + | 0.230 *** | 0.130 ** | 0.085 + |
| **SM** | **UM** | 0.196 ** | 0.059 | -0.098 | 0.158 ** | 0.040 | 0.052 |
| **UM** | **SC** | -0.355 *** | -0.640 *** | -0.106 | -0.363 *** | -0.614 *** | -0.161 ** |
| **UM** | **IM** | 0.047 | -0.028 | -0.102 | -0.542 *** | -0.117 | 0.058 |
| **UM** | **SM** | -0.067 | 0.047 | 0.042 | 0.316 *** | 0.224 *** | 0.026 |
| **UM** | **UM** | 0.376 *** | 0.621 *** | 0.166 ** | 0.589 *** | 0.507 *** | 0.077 |

Note: Data for the U.S. from PSID (N=2,010) and for Germany from SOEP (N=3,433). SC=Service Class (EGP annotation: I+II); IM=Intermediate Classes (IIIab+IVabc); SM=Skilled Manual Class (V+VI); UM=Unskilled Manual Class (VIIab). G=grandfather, P=father, C=son. Effect coding, reference is average over all cells of the respective sub-table.

Table 4A: Log-linear models for restricted samples of non-immigrant Germans (EG) and white Americans (WH)

| Model | Parameters | df | $G^2$ | DI | BIC | Models VII vs. V $\Delta G^2$ | p-value |
|---|---|---|---|---|---|---|---|
| U.S.-V (WH) | **G,P,C,GP,PC** | 36 | 24.3 | 4.3% | -238.8 | | . |
| U.S.-VII (WH) | **G,P,C,GP,PC,GC** | 27 | 14.5 | 3.5% | -182.8 | 9.8 | 0.367 |
| FRG-V (EG) | **G,P,C,GP,PC** | 36 | 28.5 | 3.7% | -259.6 | | |
| FRG-VII (EG) | **G,P,C,GP,PC,GC** | 27 | 14.0 | 2.6% | -202.1 | 14.5 | 0.106 |

Note: Data for the U.S. from PSID (N=2,010) and for Germany from SOEP (N=3,433). G=grandfather, P=father, C=son.

Table 5A: Association parameters from Models VII (Table 4A) for restricted samples of non-immigrant Germans (EG) and white US-Americans (WH)

| | | U.S. | | | FRG | | |
|---|---|---|---|---|---|---|---|
| **Origin** | **Destination** | **GP** | **PC** | **GC** | **GP** | **PC** | **GC** |
| **SC** | **SC** | 0.669 *** | 0.631 *** | 0.119 | 0.497 *** | 0.558 *** | 0.119 * |
| **SC** | **IM** | -0.095 | -0.074 | 0.025 | 0.220 ** | 0.056 | 0.069 |
| **SC** | **SM** | -0.212 * | -0.333 *** | -0.080 | -0.234 ** | -0.272 *** | -0.141 * |
| **SC** | **UM** | -0.362 ** | -0.224 ** | -0.063 | -0.483 *** | -0.342 *** | -0.047 |
| **IM** | **SC** | -0.246 *** | 0.138 | -0.087 | -0.038 | 0.148 * | 0.063 |
| **IM** | **IM** | 0.451 *** | 0.091 | 0.187 * | 0.551 *** | 0.156 * | -0.018 |
| **IM** | **SM** | 0.043 | 0.054 | -0.076 | -0.316 *** | -0.097 | 0.016 |
| **IM** | **UM** | -0.248 * | -0.283 ** | -0.024 | -0.197 * | -0.207 ** | -0.061 |
| **SM** | **SC** | -0.141 + | -0.040 | 0.023 | -0.179 *** | -0.077 | -0.067 |
| **SM** | **IM** | -0.427 *** | 0.004 | -0.170 + | -0.220 *** | -0.056 | -0.083 |
| **SM** | **SM** | 0.245 ** | 0.070 | 0.136 + | 0.250 *** | 0.115 * | 0.073 |
| **SM** | **UM** | 0.323 *** | -0.033 | 0.011 | 0.149 * | 0.018 | 0.077 |
| **UM** | **SC** | -0.283 *** | -0.729 *** | -0.054 | -0.279 *** | -0.629 *** | -0.116 * |
| **UM** | **IM** | 0.071 | -0.021 | -0.042 | -0.551 *** | -0.157 + | 0.032 |
| **UM** | **SM** | -0.075 | 0.209 * | 0.021 | 0.300 *** | 0.255 *** | 0.052 |
| **UM** | **UM** | 0.287 ** | 0.540 *** | 0.076 | 0.531 *** | 0.531 *** | 0.032 |

Note: Data for the U.S. from PSID (N=1,492) and for Germany from SOEP (N=2,992). SC=Service Class (EGP annotation: I+II); IM=Intermediate Classes (IIIab+IVabc); SM=Skilled Manual Class (V+VI); UM=Unskilled Manual Class (VIIab). G=grandfather, P=father, C=son. Effect coding, reference is average over all cells of the respective sub-table.

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